Name:

at1118paper: Complete the Square (v407)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 54x = -440$$

Add $\left(\frac{-54}{2}\right)^2$, which equals 729, to both sides of the equation.

$$x^2 - 54x + 729 = 289$$

Factor the left side.

$$(x - 27)^2 = 289$$

Undo the squaring. We need to consider both $\pm\sqrt{289}$.

$$x - 27 = -17 \quad \text{or} \quad x - 27 = 17$$
$$x = -44 \quad \text{or} \quad x = -10$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 56x = -159$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 6x = 616$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 18x \;=\; 1008$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 28x \;=\; 380$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 48x \;=\; 265$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 42x \;=\; 184$$